

SN 10/083,283

Amendment of the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (original) A process for extending the lifespan of a metazoan or metazoan cells

comprising administering to said metazoan a composition comprising a C₆₀ compound having x

pairs of adjacent carbon atoms bonded to two carbons of said C₆₀ compound wherein said

adjacent carbon atom is further bonded to two groups of a general formula -COOH and -R,

wherein R is independently selected from the group consisting of -COOH and -H, and wherein x is at least 1.

2. (original) The process of claim 1 where x is 4.

3. (original) The process of claim 2 wherein said composition comprises said C₆₀

compound, its pharmaceutically acceptable salts and pharmaceutically accepted esters, and a

pharmaceutically acceptable carrier, present in said composition in a therapeutically effective

amount.

4. (original) The process of claim 1 wherein x is 3.

5. (original) The process of claim 4 wherein said C₆₀ compound is C₃tris malonic acid C₆₀.

6. (original) The process of claim 1 wherein said C₆₀ compound is administered intravenously, intramuscularly, subcutaneously or orally.

7. (original) The process of claim 6 wherein said C₆₀ compound is administered intravenously, intramuscularly or subcutaneously in an amount of at least 0.1 mg/kg.

8. (original) The process of claim 7 wherein said C₆₀ compound is administered intravenously, intramuscularly or subcutaneously in an amount of about 3 mg/kg.

Spec defn. of "Lifespan"

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calculations based on the pharmacokinetic data, the therapeutic plasma levels appear to be between 0.1 and 1 $\mu\text{g}/\text{ml}$. Although equivalent amounts of C_3 are absorbed if the compound is given by intravenous, intraperitoneal or subcutaneous administrations, only about 1/15th of this dose is absorbed when given orally (e.g. in drinking water). However, the standard

5 pharmaceutical formulations of C_3 for oral delivery are expected to significantly increase the bioavailability of orally-administered C_3 (e.g. incorporation of C_3 into time-release tablets).

It is envisioned that the instant invention is useful for all metazoans, including but not limited to vertebrates, and more specifically to mammals, including humans and their companion animals.

10 "Lifespan" or "expected lifespan", as utilized in this patent application, is the average expected length of life of a kind of organism or cell in a particular environment. The lifespan increased by the instant invention is the expected average length of time (from birth to death) that a metazoan would be expected to live (i.e., "generic" expected lifespan), if that metazoan were not utilizing the process of the instant invention. As the results of Example 2 indicate, mice subject to the process of the instant invention had an actual lifespan of 28.7 months, which corresponded to a lifespan that is 20% greater than the control mouse's lifespan of 23.5 months. The lifespan of the control mouse used in this example represents the generic "expected lifespan".

15 Because many important biological reactions generate reactive oxygen species intentionally, or as unwanted toxic by-products, antioxidant molecules capable of supplementing the antioxidant defenses of cells as potential therapeutic agents are therapeutically useful.

The compositions of the instant invention have novel antioxidant properties.

20 According to the present invention, the reactivity of the C_3 malonic acid derivative (*e,e,e*